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REPORT

OF

DR. SYDNEY STEPHENSON,

UPON

OPHTHALMIA,

IN THE

South Metropolitan District School,

AT SUTTON.

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ARRANGEMENT OF REPORT.

1. Description of the various forms of Ophthalmia.

2. History of recent Outbreak, together with a discussion of its probable Causes.

3. Present Condition of the Children with regard to their Eyes.

4. Means of coping with the existing Disease.

5. Suggestions and Recommendations touching—

 (*a*) The Banstead Road School ; and

 (*b*) The various Establishments at Brighton Road.



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62, Welbeck Street,

Cavendish Square, W..

November 15, 1893.

To the Board of Management of the
South Metropolitan School District

Gentlemen,

On November 4th, 6th, 8th, and 10th, at the request of your Board, I visited the South Metropolitan District School at Sutton, to enquire into an outbreak of ophthalmia which has latterly given rise to grave anxiety. Of those days, two and a half were devoted to an examination of the children's eyes, while the remainder was taken up by an inspection, both general and particular, of the school premises. Upon the occasion of three out of my four visits I had the assistance of Dr. Downes Local Government Board Inspector, to whom I am indebted for advice upon various points connected with this Report.

A total of 2,219 children were examined—that is, every inmate of the Brighton Road and of the Banstead Road School respectively.

It will clear the ground if we discuss at the outset that group of diseases included under the general name ophthalmia.

Roughly speaking, ophthalmia is inflammation of a delicate membrane (the *conjunctiva*) which lines the eyelids and covers the front of the eye, and the term is applied to a number of different affections. All forms, however, have one feature in common, viz., the presence of discharge from the eye. The discharge varies in colour and amount. It is sometimes white and slimy, like that from the nostrils during a "cold in the head,"

while at other times it is yellow, like matter. The white discharge is termed mucus, and the yellow, pus, and intermediate varieties are often met with, and are styled muco-purulent. All discharges from an inflamed eye should be regarded as contagious, that is, they are capable of communicating disease if brought into contact with healthy eyes, a transference that may take place in numberless ways. Thus, the infecting material may be conveyed by water, by flannels, or by towels, when used in common by the sick and healthy ; or a morsel of discharge may be directly planted, so to speak, in the eye of a second person. I do not, for my own part, believe that the various forms of ophthalmia are often, if at all, dependent on air-borne infection. At least, such transference could only come about under the influence of bad surroundings, such as neglect of treatment, unwashed bedding, filthy clothes, overcrowding, or the herding together of diseased and healthy persons in one room.

The term Acute Ophthalmia includes, at least for our present purposes, two distinct forms of disease, namely, purulent ophthalmia and muco-purulent ophthalmia. The former, purulent ophthalmia, is invariably the result of contagion. It is a most serious disease, and, even under the best conditions, sight is not infrequently lost from ulceration or sloughing of the transparent front of the eye, or *cornea*, as it is called. Muco-purulent ophthalmia, on the other hand, is much less formidable, and is vulgarly termed the "blight." It occurs in epidemics, and is due in many instances to contagion, to measles, or to peculiar meteorological conditions, of which we know very little. The majority of cases get well in three to four weeks, and entail no evil consequences. It is particularly apt to relapse after apparent cure.

The term chronic ophthalmia includes an affection known as trachoma, in the course of which the conjunctiva of the lids gets red and thickened and throws off discharge, while its surface becomes studded with small growths, sometimes resembling "proud flesh," at others reminding one of grains of boiled sago. It is this affection, trachoma or granular lids, which lies at the root of epidemics of acute ophthalmia among large congregations

of children. Trachoma is contagious, and those affected with the disease are apt to get their eyes acutely inflamed from trivial causes, such as measles, dampness of atmosphere, easterly winds, and so forth. The inflammatory attack much resembles acute muco-purulent ophthalmia, but it differs from ordinary forms of that affection in the fact that when occurring in a trachomatous patient its course is likely to be obstinate in spite of treatment. Such inflammatory attacks always, in my experience, exasperate the original condition. Overcrowding and unhealthy surroundings, probably by multiplying opportunities for contagion, have a marked influence both on the spread and on the malignancy of trachoma.

Apart, however, from the proneness to acute attack entailed by trachoma, that affection carries with it further disabilities, and must become under ordinary circumstances a serious obstacle to education. Its course is essentially chronic, often extending over months or years. I cite the following case as an instance that trachoma, even under the most favourable surroundings and continuous medical treatment, may persist for several years :—

A. L. was nine years of age when she first came under my notice on June 10th, 1889. She had then been afflicted with trachoma for some years. As far as the lids were concerned, the case was a severe one, but the sight was not affected.

The patient was placed under treatment, which I applied to the eyelids with my own hands daily until August 12th, 1889. Upon that date the medicament was changed, and the new remedy persevered with until April 15th, 1890. Another form of treatment was then put into force, and continued without intermission until March 20th, 1891, by which time conditions had so much improved that applications were experimentally stopped. Two months later the lids again became red and rough, and it was found necessary to treat them. At the end of about a month (June 14th, 1891) treatment was once more discontinued. It was, however, resumed upon July 6th. August 27th, treatment stopped ; October 13th until December 9th, re-applied. On the 31st of the same month it was again put into force, and kept up until September 14th of the next year, when it was stopped. Six days later, resumed and maintained until December 1st, 1892. On the 21st of that month it was once more commenced.

On March 25th, 1893, it was thought necessary to operate upon the eyelids, and treatment was suspended until the 18th of

the following month. From the latter date until the present time treatment has been applied daily.

The child, therefore, has been under medical supervision for four years and five months, during which period she has had daily applications of strong remedies over periods of one, two, three, eight, nine, and thirteen months together, but for all that the trachomatous condition is still present.

It is important to note that during the entire period covered by the foregoing history isolation has been enforced and education kept up. In fact, the patient has missed few attendances at school, and she is now in the fifth standard.

The case of A. L. is undoubtedly an extreme instance, but it shows clearly enough the tedious nature of severe trachoma. Still, the patient will eventually recover, and fortunately without any damage to sight.

As a complication, the cornea may be the seat of ulceration, or it may be attacked by trachoma, when the condition is spoken of as *pannus*. It follows from these statements that sight may suffer, and that the chances of those affected of earning a livelihood after leaving the schools may in this way be seriously handicapped. It has been pointed out by Mr. Nettleship that a majority of the young adults coming under treatment for trachoma at the London hospitals have formerly been inmates of the Metropolitan pauper schools, an observation to the accuracy of which I can bear personal testimony.

It is in view of the foregoing facts that the best authorities concur in recommending that every case of advanced trachoma be separated from other children for an indefinite period, and that systematic medical treatment be enforced.

Mention must next be made of a condition, exceedingly prevalent among children, characterised by the presence upon the conjunctiva of small transparent vesicles or blebs, accompanied in some instances by redness of that membrane and discharge from the eyes. This has been called "follicular disease," and its meaning interpreted in various ways by different authorities. Vitiated air, overcrowding, or general defective hygienic conditions have been taxed, severally and conjointly, to account for the presence of these little bodies. It has been laid down as an axiom that children suffering from this condition are peculiarly

liable to take on acute ophthalmia, that it predisposes, in fact, to epidemic waves of disease. It has even been regarded as an early stage of trachoma, to which disease it certainly bears a superficial resemblance. In my own mind I have no doubt that this follicular condition is, in many instances, almost natural in the eyes of children, and, in support of that statement, I instance the fact that, among 14,797 scholars, whom I examined a year or so ago. 13,908 (or 93·99 per cent.) showed more or less trace of the condition in their conjunctivæ. My examination, it should be noted, did not include the inmate of a single pauper school ; it was confined to public or semi-public schools, to board and to church schools, and to a couple of orphanages. It embraced schools in the counties of Middlesex, Surrey, Oxford, Kent, Nottingham, Leicester, Yorkshire and Lancashire, so that purely local conditions were absolutely excluded. In your own schools, 71·38 per cent. of the children (boys, 68·61 per cent. ; girls, 81·85 per cent. ; infants, 63·67 per cent.) have follicular changes in their eyelids.

Lastly, I turn to a disease known as Blepharitis, which affects the eyelashes by the formation of scales, scabs, or ulcerations. Severe and neglected cases produce that unsightly blear-eyed appearance with which everyone is painfully familiar. The connection between blepharitis and ophthalmia is indirect rather than direct. It is, however, important to pay regard to even mild forms of this disease when estimating the ophthalmic condition of a body of children.

The rest of this Report will be divided into the following sections :—(1) The history of the recent outbreak, together with a discussion of its probable causes ; (2) the present state of the children with regard to ophthalmia ; (3) the plans to be adopted in coping with the disease ; (4) suggestions touching (a) Banstead Road and (b) the various departments of the Brighton Road establishment.

2.—THE HISTORY AND CAUSES OF THE RECENT OUTBREAK.

Judging from the Return of Sickness supplied to the Local Government Board, ophthalmia during the last three months of 1891 averaged 8·16 cases per fortnight among the boys, and 11·3 cases among the infants ; while among the Banstead Road girls the average was as small as 0.83. During 1892 the average stood as follows : boys, 4·12 ; infants, 5·6 ; and girls, 0·79. I have arranged the averages for the first ten months of the present year in the following tabular form.

TABLE I.

Showing the fortnightly average of isolated cases of Ophthalmia amongst the Boys, Girls, and Infants, during the first ten months of 1893.

1893.	Boys.	Infants.	Girls.
January ...	2·5	7·0	3·0
February ...	5·5	18·0	3·0
March	7·0	22·5	3·0
April	8·5	27·5	10·0
May	12·5	29·0	12·0
June	14·5	35·5	11·5
July	36·5	49·5	16·5
August	77·5	67·5	18·5
September ...	121·5	94·0	15·5
October ...	114·5	98·5	3·5

The foregoing table brings the following points into relief. First, that the amount of isolated ophthalmia among both boys and infants has steadily increased since the beginning of the year. Secondly, that the boys have suffered in greater ~~proportion~~ than the infants. Thirdly, that the highest average recorded for boys was in September ; for infants, in October. Fourthly, that a slight increase in ophthalmia has taken place among the girls, extending over the months April to October. Fifthly, that the highest fortnightly average recorded for girls was in August (18·5 cases).

It may be taken, then, that since January, 1893, ophthalmic cases have multiplied to a serious extent among boys and infants, and the question naturally arises as to the cause or causes of this increase. Three factors, I believe, are mainly concerned : (1) measles ; (2) importation of affected children from the Unions ; (3) presence of a considerable number of trachoma cases in your schools. These factors may now be considered separately.

1. *Measles.* It is a well-known fact that measles attacks the mucous membrane of the eye, and the conjunctiva thus damaged is particularly prone to future troubles. Abundant evidence exists to show that measles not only predisposes to, but may actually excite, acute muco-purulent ophthalmia.

What has been the recent experience of your school with regard to measles ? An epidemic made its appearance among the infants in November, 1892. Upon the 5th of that month an entry was made of 114 cases, which number, however, had sunk to 38 by the 19th. Upon December 3rd only six cases were reported, and the epidemic was at an end. Coincidently with infants, boys were attacked by the disease, which did not attain its culminating point until a month later (December 17th), when 66 cases were recorded. The next fortnightly return (January 7, 1893) shows an entire absence of the disease. During the whole of this time it is important to note that the girls did not manifest a single case of measles, nor have they for that matter suffered since from the malady.

Now it is a striking and significant fact that the stress of the ophthalmic outbreak has mainly fallen upon boys and infants,

i.e., upon those divisions of the children affected by measles. On the other hand the girls, who had no measles, have manifested little ophthalmia beyond that for which I shall account immediately. It is difficult, therefore, to resist the conclusion that the two diseases were intimately connected.

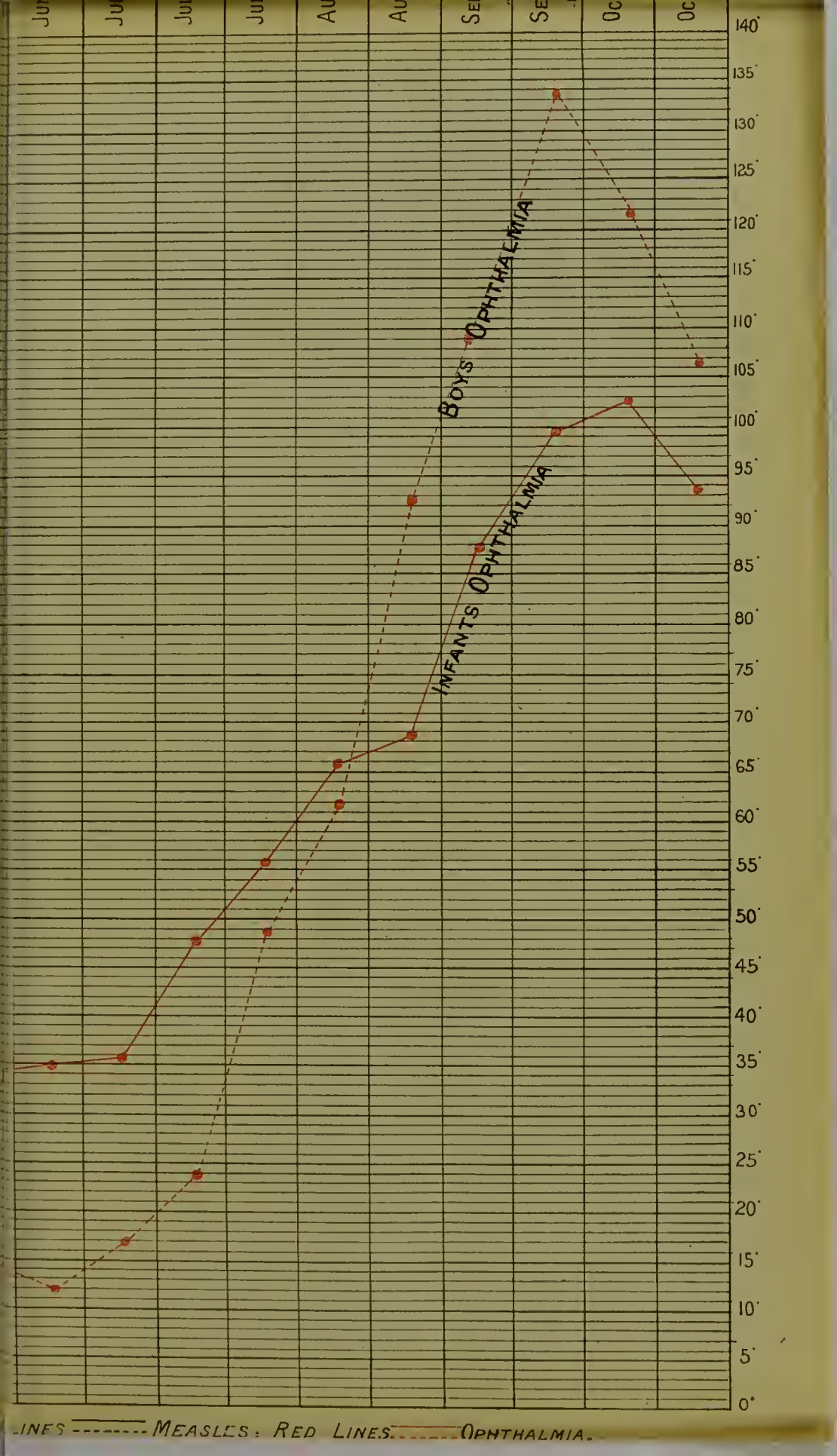
The appended chart, upon which the measles and ophthalmia curves have been drawn, both for boys and for infants, seems to point in much the same direction, It will be observed that soon after the measles line has fallen to zero, the ophthalmia line shows an upward tendency, and this is especially striking in the case of infants. As regards the boys, the connection between the two conditions does not appear to be so close, since a considerable interval separates the decline of measles and definite rise in ophthalmia. It is unfortunate that the relation between the two affections is somewhat obscured by the importation of diseased children, a subject to which we may next turn.

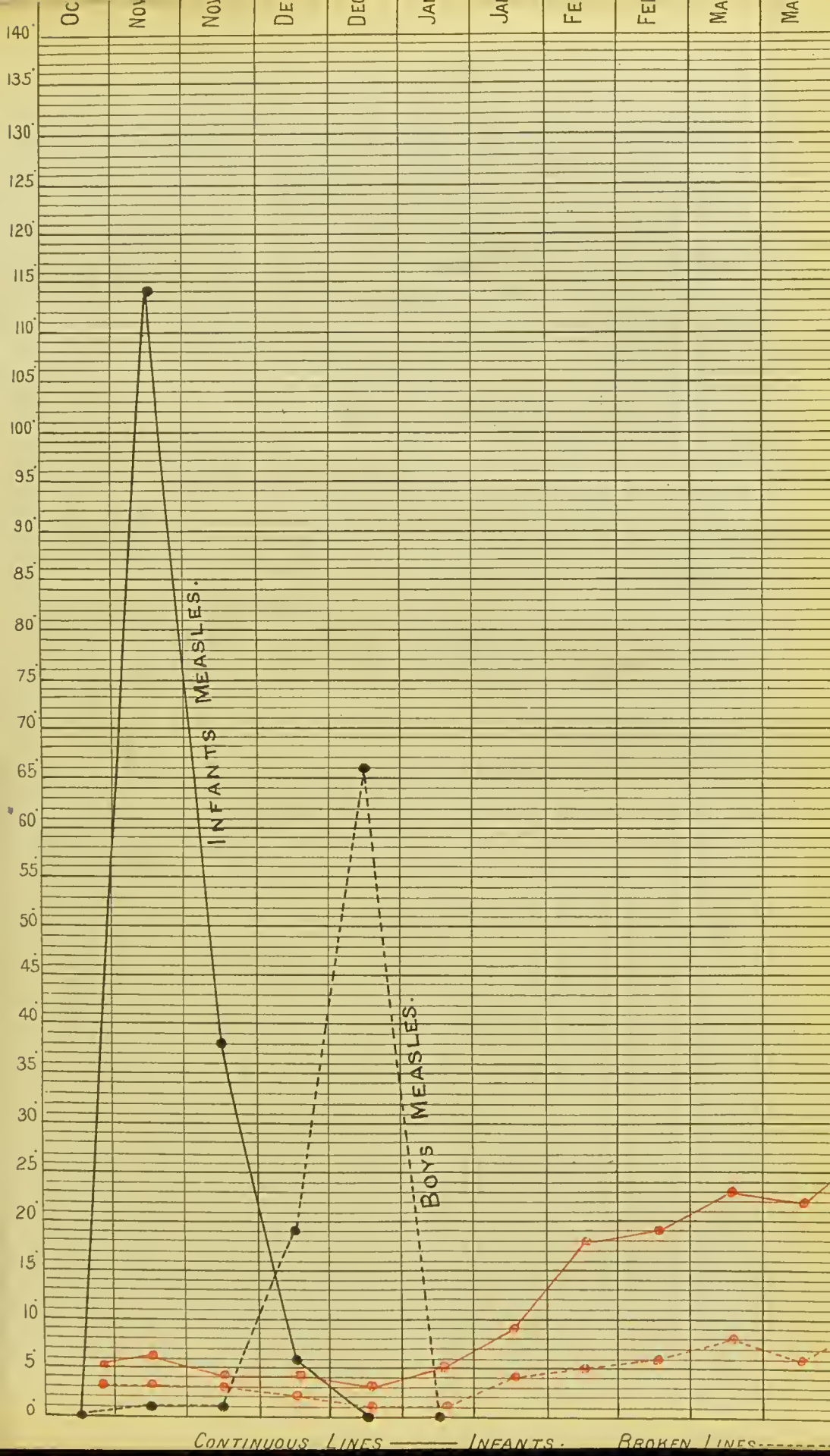
2. Importation of Diseased Children.—It appears that the Unions forming the School District were permitted to send children with ophthalmia to Sutton at the commencement of 1893. From a return, furnished to me by Dr. Rice, I find that 77 children* were thus received, the first admission taking place on January 17th, and the last on August 8th, 1893.

The amount of ophthalmia recorded this year among the boys and infants is greater, however, than can be accounted for by these admissions (53) alone. Further, as shown by the chart, the number of those affected continued to rise even after exclusion of outside cases. With regard to the girls, these ill-advised admissions (24) appear to be almost wholly to blame for the increase observed in the ophthalmia between April and September of this year. That the disease did not spread much among this class of children is probably due to the good conditions under which they live at Banstead Road School.

3. It can scarcely be doubted that the Sutton Schools have contained for many years children suffering from trachoma. Those thus afflicted are, as stated before, peculiarly susceptible

*Camberwell, 38; St. Olaves, 13; Greenwich, 11; Stepney, 8; Woolwich, 7.


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BOYS MEASLES.
CONTINUOUS LINES —— INFANTS. BROKEN LINES ------

to noxious influences, a tendency that has probably told in two ways during the recent outbreak. In the first place, boys or infants with trachoma would in the event of their developing measles be very likely to figure afterwards as ophthalmic patients. Secondly, their combustible tendencies, so to speak, would come into play ; and this would probably account for the continuance of acute disease, even when outside admissions had been entirely stopped.

To sum up, I believe that the epidemic was due to the importation of outside cases into a community of children, many of whom were rendered susceptible by the existence of long-standing trachoma and of recent measles. So much for origin and material ; but I am bound to add that in my opinion the faulty sanitary conditions prevalent in some parts of the buildings must be held responsible for much of the subsequent spread of the disease.

3.—PRESENT CONDITION OF THE CHILDREN WITH REGARD TO THEIR EYES.

In estimating the ophthalmic condition of the children, I have paid attention to the following points :—(1) Blepharitis. (2) The state of the conjunctiva or lining membrane of the eyelids. (3) The presence or absence of discharge from the eye. (4) Damage to the cornea.

1.—BLEPHARITIS.

TABLE 2.

Showing the numbers and percentages of Boys, Girls, and Infants affected with Blepharitis. Inmates of Infirmary, Iron House, and Extension included.

	NUMBER EXAMINED.	BLEPHARITIS.	PERCENTAGE.
BOYS	1,007	66	6·56
GIRLS	667	66	9·90
INFANTS. ...	545	32	5·87
TOTALS ...	2,219	164	7·39

It is a curious fact, again brought into prominence by the table given above, that blepharitis seems to be more frequent amongst girls. The connection, however, between this affection and ophthalmia is indirect rather than direct, and beyond remarking that boys and infants show little difference, its presence hardly calls for further discussion in this Report.

2.—STATE OF THE CONJUNCTIVA.

As regards the condition of the conjunctiva, the children have been divided into three groups, which may for shortness sake be distinguished by the letters A, B, and C. GROUP A indicates that the lining membrane of the eyelids showed little obvious change ; in other words, that it was quite healthy. GROUP B denotes that the conjunctiva showed traces of that affection already described under the name of "follicular disease." Among this group are included cases which approximate at one end to A, at the other end to C. GROUP C includes those children (1) who showed signs of trachoma, and (2) those whom I found to be suffering from some form of acute ophthalmia. The latter are included here because during an inflammatory attack it becomes almost impossible to ascertain the true condition of the conjunctiva with regard either to follicular change or to trachoma.

One further explanation should be given. A difference was sometimes observed between the eyes of the same individual. In that event I have classed the case in terms of the worst eye.

Table 3.

Showing the condition of the Conjunctiva among the whole of the Sutton Boys, Girls, and Infants. Percentages also given.

	Number Examined	STATE OF CONJUNCTIVA.		
		A.	B.	C
		PERCENTAGE.	PERCENTAGE.	PERCENTAGE.
Boys	1,007	64 = 6·36	691 = 68·61	252 = 25·03
Girls.....	667	49 = 7·35	546 = 81·85	72 = 10·80
Infants.....	545	60 = 11·01	347 = 63·67	138 = 25·32
Totals ...	2,219	173 = 7.80	158 = 471·38	462 = 20·82

With regard to columns A and B, I do not propose to discuss the numbers and their meaning at length, for reasons which will have been gathered from the introduction to this Report. It will be more profitable to focus attention upon column C, since that is concerned with children in need of treatment.

The table shows that 20·82 per cent. of the Sutton children have trachoma or some form of acute ophthalmia, diseases which always call for isolation and treatment. It is interesting to observe that the boys and the infants show nearly the same proportion of trachoma—25·03 per cent. and 25·32 per cent. Girls, upon the other hand, have little more than half the amount of disease manifested by the two former classes of children.* To put the matter in another way, out of 100 children with trachoma, the boys would furnish 54·54, the infants 29·87, and the girls only 15·59 cases.

Regarding the distribution of these 462 cases, 125 were found among the boys at Brighton Road, 56 among the infants, 2 in the probation house, while 56† were discovered among the girls at Banstead Road. The remainder, 223, were isolated either in the infirmary or in its overflows. It seems to have been out of the question for Dr. Rice to isolate those cases which I found loose in the school, because of the defective accommodation at his disposal. He had to content himself by separating, as far as possible, those children who showed symptoms of the disease in its acute form. Under the circumstances, this was, perhaps, the best policy, inasmuch as those cases are more certainly contagious than the others to which I have referred. At the same time, I must insist upon the necessity of separating all children in column C as soon as the necessary arrangements are completed.

As to acute ophthalmia, of the muco-purulent type, I found 27 cases, distributed through the buildings as follows:—Infirmary, iron-house, and extension, 21; probation, 1; infants,

* Under the general term "girls" were included 15 cases of trachoma in the Brighton Road Infirmary, of which number eight were stated to be seven years of age, and seven were recorded as eight years of age. It is obviously an open question whether these 15 children should not be classed as "infants."

† Eight of these were in the Banstead Road Infirmary.

2 ; boys, 3. It is satisfactory to note that the Banstead Road girls did not show a single acute case. The character of the disease was mild among the six children not isolated, and the attacks might easily arise in the interval between two medical inspections, a fact that probably accounts for the non-separation of those cases. Among the infirmary children, however, the disease was of a more severe character, but I found no instances of purulent ophthalmia even among those patients.

This part of my Report may be concluded by a special reference to the Banstead Road girls, who are certainly in a better ophthalmic condition than the other children.

The tables given thus far have shown that girls collectively contrast favourably with either boys or infants, but, for all that, the figures given have not done Banstead Road that justice to which it is entitled for the following reasons :—

1st. No deductions have been made for trachoma, located in Banstead Road, but having come to that school *via* the infants' at Brighton Road.

2nd. No account has hitherto been taken of girls who had ophthalmia when drafted from the Unions.

No matter how healthy school buildings may be, that alone cannot, of course, cure imported ophthalmia, from which statement it follows that, in justice to Banstead Road, allowance should be made for such cases. Again, for purposes of comparison, those girls isolated in the Banstead Road Infirmary for trachoma may be eliminated from our calculations.

Therefore, the actual condition as to trachoma of the Banstead Road girls will be represented by the following deductions from the total number (56) recorded for that school. First, 32* children who have been transferred from the infants' department since the year 1889. Second, 5 girls sent to the school with ophthalmia during the first eight months of the current year. Third, 8 trachomatous girls whom I found separated

* In 1889, 3 children; in 1890, 4 children; in 1891, 8 children; in 1892, 6 children; and as lately as September and October of this year, 11 children.

in the local infirmary. Thus corrected, the number of trachoma cases at Banstead Road stands at 11.

TABLE 4.

Showing the numbers and percentages of Trachoma among the Boys at Brighton Road, the Infants at Brighton Road, and the Girls at Banstead Road. All inmates of infirmaries, iron house, extension, and quarantine have been excluded, and the Banstead Road totals have been corrected by elimination of certain cases. The figures for Boys and Infants respectively have also been corrected by exclusion of imported cases.

		NUMBER.	TRACHOMA.	PERCENTAGE.
BRIGHTON ROAD.	BOYS	823	121	14·70
	INFANTS	382	48	12·57
BANSTEAD ROAD.	GIRLS...	586	11	1·89

The difference between girls, on the one hand, and boys and infants on the other, is clearly brought out by the foregoing figures. A simple sum will show that the percentage of trachoma is about seven and a half times greater among the latter than among the former class. Nor is this to be wondered at when one considers the comparative infrequency of opportunities for contagion afforded by the environment of the girls. Taken by itself, it forms, indeed, a strong argument in favour of the "block" system as opposed to that plan by which many children are domiciled beneath a common roof.

3.—DISCHARGE FROM THE EYES.

The importance of discharge from the eyes has been previously pointed out, and the subjoined table shows that of your 2,219 children as many as 245 (or 11·04 per cent.) had this symptom.

TABLE 5.

Showing the numbers and percentages of Boys, Girls, and Infants who had discharge from their Eyes. Inmates of Infirmary, Iron House, and Extension included.

	NUMBER.	WITH DISCHARGE.	PERCENTAGE.
BOYS	1,007	117	11·62
GIRLS	667	22	3·30
INFANTS	545	106	19·45
TOTALS	2,219	245	11·04

The table demonstrates clearly that the greatest percentage of discharge is among the infants, a fact which tallies with the general impression that the younger the child the more apt it is to contract a discharging ophthalmia. Next come the boys with 11·62 per cent., while the girls show only 3·3 per cent. of discharge.

A majority of those with discharging eyes also had trachoma, but some cases were found (chiefly in the infants' school), in which discharge was associated with B condition of eyelid.

As might be expected, discharge among the inmates of the infirmary was characterised both by its relative frequency and by its abundance. Thus, out of 319 separated children as many as 112 (35·11 per cent.) had a good deal of muco-purulent discharge. On the other hand, the Brighton Road children showed only 9·38 per cent., while the Banstead Road girls had as little as 2·22 per cent. In the two latter classes the scanty discharge was often of a mucous character.

4.—DAMAGED EYES.

Last, but not least, we turn to the important question of injured eyes.

The table gives the number and percentage of eyes damaged from all causes, a total which obviously includes not only cornæ, in which mischief has resulted from acute or chronic ophthalmia, but also from other forms of injury or disease.

Table 6.

Table showing the numbers and percentages of Eyes damaged from all and every cause, all Children included.

	Number Examined.	Number Damaged Eyes.	Percentage.
Boys ...	1,007	56	5·56
Girls ...	667	43	6·45
Infants	545	36	6·61
Totals...	2,219	135	6·08

The differences between boys, girls, and infants are not, it will be noticed, particularly striking.

If now we exclude from our calculations all eyes which have sustained damage from injury, the ophthalmia of babies, scrofula, or syphilis, in a word from all and every affection except ordinary ophthalmia, both acute and chronic, our results will come out as follows :—

Table 7.

Table showing the numbers and percentages of eyes damaged by Acute or Chronic Ophthalmia, the whole of the children included.

	Number Examined.	Number Damaged Eyes.	Percentage.
Boys ...	1,007	35	3·48
Girls ...	667	23	3·45
Infants	545	27	4·96
Totals...	2,219	85	3·83

Out of the total damaged eyes, 85—that is, 62·96 per cent.—belonged to the latter group.

Contrasting together boys, girls, and infants, a glance at the table shows that the infants come highest with 4·96 per cent. of damaged eyes, while the boys and girls are about equal with 3·48 per cent. and 3·45 per cent. respectively. The average of

these figures is 3·96 per cent., which cannot be regarded as high when one remembers the amount of disease present in the Sutton Schools.*

The term "damaged eye" is obviously wide, and affords no clue as to the amount of damage, which might be great or small. In order to meet this difficulty, I tested all the boys and girls with corneal damage by means of printed words of varying size. Among some of the infants I formed an approximate estimate without verifying with test types. The facts thus elicited may be set forth in the following way :—

				SPECIMEN OF ACTUAL TYPE.
33	Eyes read		*Diamond Type*	The place of our retreat was a neighbourhood
25	,,	,,	*Pearl*	little habitation was situated at the foot
11	,,	,,	*Nonpareil*	the dishes, plates, and coppers,
†6	,,	,,	*Brevier*	fit to keep up some forms of
4	,,	,,	*Small Pica*.....	As we rose with the sun
1	,,	,,	*Pica*.....	for the making of
2	,,	,,	*English*	youngest boys being
1	,,	,,	*Great Primer*.....	edicts could
1	,,	,,	*2-line Great Primer*.....	a form
‡1	,,	,,	*8-line Roman*	JU

85 Eyes damaged as the result of acute or chronic ophthalmia.

* These figures take no account of the ophthalmic patients now at Hanwell, among whom the proportion of damaged eyes stands high (23 eyes among 20 patients). Nor does it include children at Witham or Herne Bay, concerning whose condition I possess no informatiou.

† One of these eyes was affected by a squint. Its sharpness of sight would be impaired from that cause apart from any corneal mischief.

‡ This eye also had a squint.

§ Three boys (Wilkinson, Pearl, and Borrett) have lost an eye apiece. They were lost, however, before coming to the school, and have nothing to do with the present outbreak.

4.—MEANS OF COPING WITH EXISTING DISEASE.

The Sutton Schools contain 462 children (252 boys, 138 infants, and 72 girls) who, in my opinion, need treatment.

The essential elements for the eradication of ophthalmia may be briefly stated as prolonged isolation, systematic medical treatment, and skilled nursing; but the benefit of these measures will be greatly neutralised if provision be not made for the efficient schooling of the patients. I hold strongly to the opinion that trachomatous children should, with few exceptions, be subjected to systematic education. This view is based on firmer ground than that of mere theory; for experience has shown that 90 to 92 per cent. of such patients can attend school regularly, provided at the same time treatment of the eyes be persevered in. The diseased process is rendered quiescent, with the result that education and medical treatment are enabled to go on side by side. Let it be remembered that the majority of these children are not confined to bed; that they are up and about, and full of mischief, which is intensified by an idle and purposeless infirmary life. At the Hanwell Ophthalmic School the patients receive 23 hours schooling a week. They are examined annually by H.M. Inspector, and at his last visit the boys obtained an average of 89·4 per cent. of passes. To condemn such children to the routine of infirmary life, with its absence of healthy employment and discipline, is to do them a serious injustice: it is to handicap the handicapped, and still further to hamper those already hampered.

Before discussing various plans for the isolation and schooling of these children, I should like to draw attention to the need of increased medical service. The resident medical officer, Dr. Rice, has to attend to upwards of 2,000 children, many of whom must need his constant and unremitting care. He has to look after two distinct schools, which cover no less than 111 acres of ground; and he must necessarily do a considerable amount of

clerical and other routine work. Even under favourable conditions, his time would be fully occupied by inspections of the children, dispensing, transfers, admissions, discharges, and visits to various parts of the school premises. But during the prevalence of such epidemics as measles and ophthalmia, I fail to see how any one man, no matter how energetic, could efficiently look after your gigantic establishment. To my mind, a first necessity in grappling with the cases of trachoma will be to engage the services of an assistant medical officer, who should, as far as possible, take control of those patients. Let me add a word concerning a closely associated question, that of nursing. It would be a truism to say that skilled nursing is of the utmost importance in many serious conditions, to which ophthalmia furnishes no exception. At the present time, the proportion of day nurses to patients stands at one to sixteen. This may be regarded as ample, but I would lay it down as a general rule that one nurse should never have under her immediate control more than twenty ophthalmic cases at one time, independent of relief for sickness and temporary absence. Some twenty-three nurses, therefore, will be needed to look after your 462 patients.

In the matter of actual isolation, two plans suggest themselves :

Plan A.—The best way of dealing with the mass of ophthalmic cases is to send them right away from Sutton. There is precedent for this plan, but I am inclined to think from the experience of other schools that great difficulty would be found in securing suitable accommodation. It is scarcely probable that a building, constructed on modern principles and capable of holding 462 patients, will lie ready to hand, so that were the plan adopted it would entail, I fear, the special erection of a hospital-school. It is, however, the best way of tackling the disease, and if it can be carried into effect would be preferable to the second plan. Among its indirect advantages may be included decentralisation, and the certainty of lessening points of friction, both lay and medical.

Plan B.—Under this scheme ophthalmic cases would be isolated in the two detached blocks now used for infants. It

would involve certain structural alterations in the premises, which at 50 feet super. per child (the least amount that should be allotted to ophthalmic cases) would hold only 338 patients. It would be necessary, then, to convert some of the other roons, now used for schooling purposes, into dormitories. Thus adapted, the five class-rooms (Nos. 25, 26, 63, 64, and 67) could take an additional 70 children, while the school-room (No. 29) would accommodate 48 patients. The total sleeping capacity of the two blocks would thus come to 456, which is very little below the number of ophthalmic cases. The day-room, the dining hall, and the two play-sheds have not been included in the above calculation. It would be necessary, however, to replace the school-rooms which had been merged into dormitories by temporary iron buildings, which might also be made to include any additional housing needed for the administrative staff.

One of the drawbacks to this scheme has to do with the large size of certain wards, and the consequent difficulty in efficient classification of the ophthalmic patients. The difficulty, however, is not insuperable ; the dormitories might be subdivided by wooden partitions extending from floor to ceiling. Special attention would have to be paid to the heating and ventilation, not only of those rooms, but also of the entire building ; and the suggestions made in a subsequent part of this Report (see Infants' Department) should receive attention at the hands of your Board. Separated children, if there be no technical objections, should be placed under a distinct administration, and I need scarcely add that isolation ought to be rendered complete and perfect.

There is another point that will call for serious consideration, namely, what is to become of infants displaced under the foregoing arrangement? The facts of the case may be summed up as follows. Accommodation must be found for 334 infants ; that is, the present number less 56 who require treatment. Four courses, either separately or in combination, seem to lie open. First, to erect three new blocks at Banstead Road, and for the time being to use that school as common to both girls and infants, but there are obvious disadvantages attending this plan. Second, to remit

a proportion of the infants to Witham in exchange for boys returned to Sutton. Third, to build an "intermediate" school, meanwhile billeting infants among boys and girls, and providing if necessary temporary accommodation for them, either at Sutton or elsewhere. Four, to avail yourselves largely of the advantages afforded by the boarding-out system.

The number of ophthalmic patients would gradually diminish. On the completion of a new infirmary (see Infirmary), the remaining cases could be there accommodated, and the infants' block might then revert to its original purpose. From these remarks it will be gathered that I regard the erection of a new infirmary as an integral part of plan B.

As regards sickness, general maladies arising among ophthalmic patients must obviously be treated within the walls of the isolation school. On the other hand, all illness in the main body of the school will find accommodation in the infirmary extension.

5.—SUGGESTIONS AND RECOMMENDATIONS.

A.—BANSTEAD ROAD SCHOOL.

Banstead Road School was erected in 1884 ; it is, therefore, the most modern of the Sutton buildings. It furnishes an excellent example of the so-called "block system." The subdivision of its inmates into groups of about 100, together with their freedom of life, probably accounts in great measure for their comparative well-being. Whatever the cause, the girls who form its population look bright and intelligent, and the condition of their eyes is better than in any other department of the Sutton Schools.

1. Exercise and Recreation.—Although the school area contains 19 acres, no portion has been hitherto devoted to the purposes of a field play-ground. I am informed, however, that a proposal has been made to acquire a plot of ground in front of the administrative block for gardening and recreation. This site would satisfy two chief requirements, namely, ample grass space and easy access. Given such a field, there is no reason why the girls should not indulge in hockey, football, and other games.

The girls, by the way, are provided with no kind of gymnastic apparatus however simple—an omission that should assuredly be remedied.

2. Dormitories.—The four large wards contained in each block are, in my opinion, satisfactory, except in one respect—that the walls, which have a southern aspect, are damp. This defect should be at once remedied, since it is important, not less for ophthalmic than for general reasons, that the air of sleeping rooms should be as dry as possible.

The small wards, of which there are two in each block, are

devoted to the excellent purpose of accommodating the elder girls. Their ventilation is, however, defective, because the only inlets for fresh air are the windows, which may or may not be left open. This defect could be easily remedied by a couple of Tobin's tubes or a similar number of Sheringham's valves let into the outer wall of each room.

As to bed-space, I find, taking 36 superficial feet as a basis for calculation, that each block should accommodate 102 children, whereas at present they contain from 102 to 112 beds.

The stained and polished floors of the wards not only look well, but are quite in touch with the views of modern hygiene.

3. School and Class Rooms.—Of the seven class-rooms, four slightly exceed while three fall short of the minimum amount of floor-space (9 superficial feet) recommended by the Education Department. This minimum is small, so that rooms having such a ratio require free ventilation. I mention this point simply to emphasise the need of intelligent supervision of the windows on the part of the teachers. Some of the rooms conveyed a distinct impression of "stuffiness" on the occasion of my visit.

The schools lie at some distance from the blocks, and in the absence of umbrellas it follows that the girls' cloaks must be often saturated with rain. The cloaks, however, wet or dry, are hung in a dark, ill-ventilated lobby at the entrance to the class-rooms. This arrangement is obviously undesirable, even if not actually unhealthy. A well-ventilated cloak-room, with plenty of peg space, should be provided in each school block, away from the class-rooms.

4. Closets.—

(*a*) For officers' use there are two in each block. These closets are of modern type, fitted with proper pans and flushing apparatus.

(*b*) For use of children. These closets are of the simplest and worst possible pattern. A set of closets belongs to each block, and consists of a trough covered with a wooden seat,

and flushed direct from the service pipe. That this flush is inefficient is more than likely, owing to the improbability of obtaining anything like a sufficient volume of water. Since it is not automatic, an attendant has to flush out the trough by turning a tap at uncertain intervals. By this means dejecta accumulate and poison the surrounding air until the next time for flushing comes round. Such an arrangement violates one of the first rules of modern sanitation, which directs that excreta should be conveyed away from a dwelling with the least possible delay. The existing plan would be a bad one even if each closet were separated from its block by a cross-ventilated lobby. However, no such lobby exists, and there is nothing to prevent foul air entering the house. In my opinion, troughs* should be done away with, and replaced by a sufficient number of wash-out closets provided with water-waste preventors. Furthermore, closet and interior of block should be separated, if possible, by a disconnecting lobby.

A minor point may be mentioned. The closets are all on the ground-floor, so that the dormitories are unprovided with w.c. accommodation. It would be better for closets to adjoin the sleeping rooms—an arrangement which would altogether obviate the use of utensils in the wards.

5. Washing and Bathing Arrangements.—It is beyond a doubt that ophthalmia may be passed on from child to child by defective washing arrangements. Indeed, given a case of the disease, and an indiscriminate use of washing appliances, then the spread of the malady is only a matter of time. This is an every-day experience, and the following instance may, perhaps, help to illustrate my meaning.

Some two months ago, my advice was asked with regard to an epidemic of ophthalmia among the children of a provincial school. The disease was practically confined to the girls and infants, who washed in common at fixed basins. The boys, who

* Of course there would be no particular objection to such troughs if they were provided with automatic flushing apparatus, *and placed in a detached shed away from the blocks.*

occupied another part of the building suffered little, and that not until late in the history of the epidemic. Enquiry elicited the fact that in the first instance the disease had been brought into the school by an infant, and I have no doubt whatever that it was afterwards spread among the other girls and infants by means of the basins and towels which they used in common.

With such facts in view, I have no hesitation in saying, that in dealing with any large collection of children the only admissible means of washing is by the "jet" system. The method to which I allude—as you are doubtless aware—renders it impossible for more than one child to use the same water, while basins and bowls are dispensed with entirely. In this connection I may be permitted to place upon record the principles upon which such jets should be constructed and arranged. This is the more necessary, because in subsequent parts of this Report I shall have to revert to this point.

PRINCIPLES.

1. Hot and cold water should be supplied, and thoroughly mixed in a special chamber. The latter should be provided with a thermometer, so that the temperature may be regulated.

2. The jets should be of the simplest possible construction, and attached directly to the service pipe. Fancy patterns are best avoided, in view of the mischievous tendencies of children. I recommend simple knobs, perforated by three to five fine holes on the under surface. The "spread" of the water need never exceed five inches—*i.e.*, about the width of outspread palms—at the level of the trough.

3. Individual jets should be at least 18 inches apart, so as to prevent any possibility of two children using water from the same nozzle. They should be fixed above the troughs high enough to allow children, if necessary, to douche their heads. As to number, jets should be provided for one-third of the total inmates. Thus, one of the Banstead Road blocks, accommodating 108 children, should have 18 jets in each of its two lavatories.

4. The troughs into which waste water falls should be constructed entirely of some non-absorbent material that can be easily scrubbed down and disinfected. Stoneware is perhaps the best for this purpose, and slate is good, but does not look quite so well. *Wood, certainly, ought never to be used.* It is capable of retaining germs and other organic particles, and is liable to become

covered by a species of fungus and to rot away. As to shape, the trough should in section be semi-circular, and this forms one objection to the use of slate. Angular patterns are to be condemned, inasmuch as they offer facilities for the lodgment of filth, which is closely allied to disease, no less by ancient tradition than by the light of modern scientific discovery.

It is of the first importance that the troughs be given a good fall, in order that dirty water may rapidly flow away. Furthermore, the exit should be large enough to prevent children stuffing it up with towels or other foreign bodies, so as to enjoy a wash in the trough itself. The waste pipe should pass through an external wall to discharge into the open air over a grated opening.

Evidently the troughs must be lower for the younger children, and they should be arranged with a view to obviate undue splashing.

5. A simple arrangement of valves should be provided, so that a given number of jets may be thrown into action at one time. I have often seen twenty nozzles at work when one would have sufficed for the purpose in view.

The Banstead Road School, it is true, has jets, but as a matter of fact they are merely used for the purpose of filling enamelled iron bowls, in which the girls wash, so that the main purpose of the jet system is defeated. The construction of the jets, moreover, leaves much to be desired. For instance, they are separated from the bottom of the trough by 14½ inches only, which is far too short a distance. Secondly, their orifices do not stand more than 3 inches above the top level of the trough. Thirdly, the troughs are constructed of wood, which, for reasons already given, must be regarded as most objectionable. Lastly, there are 11 jets to every 50 girls, so that their number is insufficient, even supposing they could ever be a success in actual operation.

No jets have been provided in the probation block now used as an Infirmary, the place of all others where they are absolutely essential.

I am strongly of opinion that a more efficient apparatus should be erected, and that jets should be everywhere used to the exclusion of bowls.

The towel arrangements at Banstead Road leave little or nothing to be desired, for each towel is numbered legibly, and

hung upon a numbered peg in the lavatory. The washing flannels are also marked, and the use of each of those articles is confined, as it should be, exclusively to one child.

Bathing. Each girl bathes once a week, and two bath rooms have been provided. Room A is employed by blocks 1, 2 and 3, while room B is used by the remaining three blocks.

I concur with Dr. Downes in thinking that for three blocks to use one bath is a weak point in an otherwise satisfactory system. It strikes at the root of that individuality which it is the chief aim of the "block plan" to foster and to cherish. A better arrangement would be for each block to possess its own bath, the use of which would, of course, be confined to the girls of that particular section. Every block has its own laundry, its own dining room, wash room, reading room, and play room—why not its own bath room? Besides the foregoing, there are, however, other objections to the present arrangement. The two bath rooms have been excavated beneath blocks 2 and 5 respectively. Consequently, they lie below the level of the surrounding ground; their ceilings are low, and they are badly ventilated. One need not be surprised, therefore, to learn that they soon become filled with steam when bathing is going on. Again, it must be not only a hardship, but an actual danger as well, for girls to return to their block in, say mid-winter, after a warm bath. Such exposure is to be deprecated on all grounds.

Bath towels are very properly used once only, and then sent to the laundry to be boiled. Another good point: flannels are carried by their owners from the blocks to the bath.

In conclusion, permit me to remark that I consider Banstead Road an excellent school of its kind, and the results obtained there more than justify the large initial expenditure (£92,306) incurred in its erection and furnishing. I am of opinion that, were the suggested improvements carried into effect, the school would be a model and an exemplar to other institutions.

B.—BRIGHTON ROAD SCHOOL.

The Probation House.

The Probation House, immediately opposite Belmont Station, is detached, as it should be, from the rest of the school buildings. Upon the day of my visit it contained 22 boys, 12 girls, and 18 infants—that is to say, 52 children all told. There is no overcrowding in this part of the premises. Taking 36 feet super. per head as a basis, its six wards are capable of accommodating 72 children.

I learnt that admissions take place every other Tuesday, and that the probationary period is 13 days. This period, I am inclined to think, might with advantage be extended to 20 days. Children receive no schooling while under quarantine; but I fail myself to see why they should not be systematically taught even during their 13 days' detention.

The closets need alteration: (1) The conveniences used by children are of the same faulty type already described in the Banstead Road blocks. They should be replaced by single wash-out pans, while those closets which open into the play-sheds ought to be cut off by means of an intercepting lobby, or, better still, they should be entirely detached. (2) I note that the officers' closets (two in number) ventilate into the passage which connects play-shed and lavatory. This obvious defect should be remedied.

The play-sheds are of ample size, and each is capable of holding 43 children, with a floor-space allowance of 15 feet a-piece. They struck me, however, as being both dark and cold. More windows are wanted, and the present heating arrangements are, in my opinion, insufficient.

The towels used for washing are changed daily, but I noticed that they are not numbered. With suitable numbering, a change every other day, or even twice a week, would suffice. New washing flannels are given out to each batch of children as admitted, and destroyed when they leave the probation house. It would be safer to do away with flannels altogether, and to use, if anything of the sort be thought really necessary, small pieces

of tow in their place. The jet system in use is defective, inasmuch as the troughs are constructed of wood, a material to the disadvantages of which attention has been already directed. The rose bath is constructed, I think, upon an excellent principle, and it should be used to the exclusion of all fixed baths. Bathing towels are sent to the laundry after being once used in the weekly bath.

Children undergoing probation appear to have no access to the field which separates their block from the Infants' School. A portion of that meadow might easily be fenced off, so as to allow them to enjoy the benefits of an out-door playground.

The Iron House.

The Iron House (at present used as an overflow for the infirmary) contains 40 beds, of which 38 were occupied by boys suffering from ophthalmia when I visited the hut. The building consists of two dormitories, incompletely divided by a wooden screen, and a separate day-room, while a laundry and w.c. lead from the latter.

Each bed has a superficial area of 30·8 square feet only. It is evident, therefore, that the Iron House contains too many children, or, in more direct phrase, that it is overcrowded. Bad as this condition of affairs is at any time, it becomes simply disastrous when associated with a disease like ophthalmia. Nor is the evil confined to the children, for I have repeatedly noticed that under such circumstances nurses and attendants become peculiarly liable to contract the disease. The Sutton Schools furnish a striking example of this general law, for a considerable proportion of the nurses employed in the infirmary and iron house, so I am informed by Dr. Rice, have of late months become infected.

The Iron House has unpolished instead of polished floors; it is badly heated and inefficiently ventilated. Moreover, it is devoid of proper means for washing. Enquiry disclosed the almost incredible fact that its inmates perform their ablutions at a small wooden trough in the laundry, while bathing, if my information be correct, is also carried out by the same means.

The closets, of the type already condemned, were in an unsatisfactory and uncleanly condition when I visited them.

To be brief, the Iron House is, in my opinion, quite unfit to be inhabited by any class of children, to say nothing of those afflicted by ophthalmia, a disease which demands the best possible surroundings for its eradication. I have no hesitation in saying that it should be at once abandoned.

The Infirmary.

If there be one part of the school in which sanitary conditions should be above reproach, that part is beyond question the Infirmary. Thither sick children are sent to recover, while the weakly are often detained in the wards for months together. In such a place, healthy and cheerful surroundings, with an abundance of fresh air and sunlight, are hardly of less importance than skilled treatment and nursing. Yet the Infirmary at Brighton Road enjoys along with the Iron House (also used to accommodate the sick) the distinction of being the worst of all your buildings, and discloses a state of affairs one would have believed to be impossible in these days of enlightened hospital construction.

To enumerate in detail all the bad points of the Infirmary would be to exceed the space at my command, but attention may be drawn to the following points.

The building is constructed upon a pattern which nowadays is fortunately out of date. The wards are not ventilated, as they certainly ought to be, by windows in opposite external walls. Far from that, they draw polluted air from the adjoining corridors, and it is easy to see how under certain conditions infection might spread from ward to ward by this means. The corridors, as might be expected from their situation, are dark and depressing, and a similar observation applies to the wards themselves. One of the latter (F) has actually no fireplace, although it contained, when I visited it, six patients. Recreation rooms are conspicuous by their absence, and the sick-wards are consequently used both as day and dining-rooms, a continuous occupation which cannot

fail to be harmful to the inmates. Then, again, the closets are not properly cut off from the sleeping-rooms, and they are, furthermore constructed upon the antiquated and faulty lines already described in the Banstead blocks.

The Infirmary is overcrowded in every part. Its ten wards have a total floor space of 7,392 feet. Allowing 50 square feet for each bed—not one whit too much for a general infirmary—the rooms would accommodate 147 patients. Yet, upon the occasion of my visit, they contained 231 children, of whom all save nine were under treatment for ophthalmia.

Among other points to which exception must be taken, I instance the following: (1) The scrubbed dormitory floors; (2) the badly constructed washing arrangements, the water for which is derived from the service pipe which flushes the closets; (3) the scant accommodation provided for the administrative staff.

In view of the above facts, I am of opinion that the Infirmary should be abandoned, and replaced by a building constructed upon sound principles of hygiene. Such a building might advantageously be erected away from the present premises, and in the Banstead Road, and its administration might well be distinct, except as regards the Medical Officer, from either the Banstead Road or the Brighton Road School. An improved building should have, *inter alia*, (*a*) means for isolating at least two separate epidemic diseases at one and the same time, (*b*) steam disinfecting chamber, (*c*) separate laundry and stores, (*d*) ample accommodation for administrative staff, (*e*) telephonic communication with different parts of the school premises, (*f*) ambulance.

Infirmary Extension.

The extension wards, as you are aware, are connected by a covered way with the Infirmary, and both buildings are under the control of one matron. On the occasion of my visit the extension was occupied by 51 children suffering from general ailments. Its wards also served as day-rooms for a number of ophthalmic cases from the main Infirmary.

The building contains four wards, each of which has 782 square feet of floor space, so that, allowing 50 feet super. per head, the extension is capable of accommodating a total of 62·56 patients. There is, therefore, no overcrowding in this part of the premises.

The beds are not so closely packed here as in the Infirmary. The extension block is also, I think, much better lighted, and certainly better ventilated than the main building. Its wards are clean, bright, and cheerful. The scrubbed boards, however, might be advantageously replaced by stained and polished floors.

I was glad to observe that the old trough closets are being gradually replaced by single wash-out pans, although I may observe in passing that this is the only instance in which this urgently needed alteration has been made.

The jet system should be altered in accordance with the principles laid down when speaking of the Banstead Road School.

The yard behind the extension has a much worn tar-paving, which is dusty and full of holes. It requires renewal. The fact should also be mentioned that clothes from the adjoining laundry are hung out in this yard to dry. As it is, the space is meagre enough, without being encroached on for other purposes.

The extension, then, may be regarded as suitable for sick children, provided the alterations indicated above are carried into effect.

The Boys' School at Brighton Road.

Erected in 1855, this is the oldest part of the premises. It held upon my visit, 827 boys, of whom 488 were classed as "seniors," the remaining 339 as "juniors."

The 17 sleeping wards contain from 19 to 82 beds apiece, and as many as eight rows are to be found in some of them. On the 36 feet super. basis, these wards will collectively accommodate 783 children, but as the numbers stand at 827, some amount of overcrowding exists.

The remarks made in former parts of this Report as to closets,*

* The two latrines, one at the rear of each yard, are not constructed upon the best principles, and might be replaced by more modern contrivances. At present 20 seats have to be used by, say, 500 seniors, while the 339 juniors are better off with 24 seats.

scrubbed floors, and washing arrangements, apply equally to the boys' department, so that I need not go over this ground again. But over and above these matters, I may draw attention to certain points in which improvements should be made.

1. The dormitories, much too large for efficient classification of children, struck me as being defective both as to means of ventilation and of heating. As regards the former, I would advocate the insertion of a liberal number of Tobin's tubes in external walls. An objectionable device for the admission of fresh air, which has been largely adopted in many parts of the school, may be noted in this connection. It consists of a skirting board, situated at the level of the floor, and perforated by numerous fine apertures. To begin with, cold air should enter at the upper rather than at the lower part of a room : on the other hand, with warm air the case is different, and inlets may advantageously be placed near the floor. In the next place, the arrangement in point offends an elementary canon of ventilation, which ordains that inlets (and outlets) should be so constructed as to permit of periodical cleansing. It is obviously impossible to remove dust and filth accumulated behind a fixed and nailed skirting board. It would be far preferable to introduce a sufficient number of Tobin's tubes or Sheringham's valves to the exclusion of the primitive and uncleanly device just described.

2. That is not an ideal arrangement under which the juniors undress in their day-room, and then walk along a passage to the bath-room. No provision has been made for heating the juniors' lavatory, which has four external walls and must therefore be cold in winter.

3. The junior boys' play-shed is not well lighted, while its ventilation is far from perfect. On the chapel side it has two windows, which do not open ; on the yard side, eight windows which open at the top only. Simple gymnastic apparatus might be provided in this shed. This is the more important, since the juniors, so I gather, do not use the gymnasium on the other side of the building.

4. The tailors', the carpenters', and the shoemakers' shops, situated in a detached iron building behind the school, seem rather small. Moreover, they are neither ventilated nor heated so well as they should be. The same remarks apply also to the cobbler's shop, which lies beneath the seniors' school. Even in the band-room, which has been lately erected, the heating is scarcely adequate in presence of free ventilation.

5. I attach some importance to Mr. Martin's suggestion that the walls of the two airing courts should be replaced by railings. It is most desirable to maintain a free circulation of air around these yards.

6. It appears that one drill-master and one yardsman look after the senior boys, the juniors being supervised by a man and his wife. A nurse is also employed, and helps on the junior side when not attending to the ailments of the seniors. To my mind, the attendants are not sufficiently numerous, more particularly upon the senior side. One hundred seniors or seventy-five juniors is the most that an average man can look after properly. Unless sufficient yardsmen are provided, their time is so occupied by routine work that they will not be able to direct the recreations of the children. Experience shows, moreover, that a minimum of attendance means a maximum of offences.

The provision of a woman on the juniors' side is distinctly good, since some of these children are all the better for an approach to motherly attention.

7. The seniors' gymnasium might be better ventilated, and the dark lobby which separates it from No. 96 class-room should be thrown into the former by removal of the partition.

The Infants' Department.

This comprises two detached blocks on the Brighton Road premises specially controlled by a matron, but under the general

superintendence of Mr. Martin. There were quartered in this department, upon the day of my inspection, 390 children under eight years of age ("infants"), and of this number 38 were classified as "babies" (3-4½ years). The elder children sleep, dine, wash, and live apart from the babies.

Both block A—*i.e.*, the front portion of the building, and block B—*i.e.*, the rear portion—contain six wards apiece, although one of the latter is at present used as a needle-room. Allowing to each infant 300 cubic feet, the dormitories are capable of taking 37 to 101 children each, with a total accommodation for 631. But cubic space, as hinted before, is not so trustworthy a guide to actual accommodation as floor space, especially when any height exceeding ten feet enters into the sum of the calculations. Worked out upon the latter basis, each ward would take from 31 to 85 children; and altogether the two blocks would have space for 532 beds. I am strongly of opinion, however, that 36 feet per head should be the minimum allowance when dealing with these large collections of children. Indeed, it may be laid down that, other things being equal, more space should be allowed for large than for small congregations, and more for infants than for elder children. At 36 square feet per head, blocks A and B would accommodate 309 and 134 respectively, that is a total of 443 children. There is, then, no overcrowding in the infants' department.

I beg to make the following recommendations and suggestions as touching this part of your school :—

1. Class-rooms Nos. 26 and 64 have only three windows each; they are consequently badly lighted, and, I need scarcely add, badly ventilated as well. More windows ought to be provided.

2. All the trough closets, except two upon the ground floor, have been recently provided with flushing-tanks. This is certainly a step in the right direction, notwithstanding the fact that the tanks are not automatic in their action. It would be much better, however, to abolish troughs altogether, and to use single wash-out closets, so as to rid the premises as rapidly as possible of excreta.

A closet next to the school-room is structurally unfit for its purpose.

The closets in connection with the play-sheds are far from satisfactory. They are dark and of evil odour.

I note as a good point that utensils are not allowed in the dormitories at night.

3. Both play-sheds are too dark, and, I am inclined to think, insufficiently heated. More windows should be inserted, and the means for warming augmented.

4. In 6 of the 13 lavatories, the troughs are made of wood. These should be replaced by semi-circular channels of stone-ware.

The "babies" are washed and bathed in four porcelain troughs in an apartment which also contains their closet, and is close to the ward. I see no reason why babies should not be washed at running jets, and share with the older children the advantages attending the use of nozzles. The number of troughs is too small, even if their use were confined to bathing alone, and I would suggest that one trough be provided for every five babies. The reason for this is plain, when it is borne in mind that many babies require, over and above the bath at a fixed interval, cleansing at least once a day.

The elder children bathe in the lavatory* on the ground floor in 24 enamelled block-tin tanks, which are considerably the worse for wear. After leaving those receptacles (in which soap is used), the children are further cleansed under the roses in the lavatory. Ordinary washing goes on at the sprays attached to the dormitories, but no place seems to be provided on the ground floor in which the children can cleanse their hands and faces.

As to towels, every child, so I understand from Mrs. Stevens, the matron, has a clean towel upon each occasion of washing: in other words, a towel is never used twice. This plan, although no doubt sound in theory, yet cannot be recommended in practice The washing of the scarcely soiled towels† throws an unnecessary strain upon the laundry, and is thus an open invitation to slip-shod work. The plan in force at Banstead Road—numbered

* It may be noted that the lavatory is not heated except vicariously from the stove in the dressing-room.

† A similar objection cannot of course be raised to the treatment of bathing towels, which, quite properly, are only used once, and then sent to the laundry.

towels and numbered pegs—is, to my mind, much better, and conduces to that sense of personal property and systematic orderliness which it should be the constant aim of all well conducted establishments to inculcate.

Washing flannels are used, but disinfected in carbolic lotion at the termination of bathing.

5. It would be well, I think, to heat the dormitories, certainly those occupied by the younger children, by means of hot-water pipes. Furthermore, all dormitory floors should be stained and polished.

CONCLUSION.

The object of such an enquiry as the present has been to find out the weak rather than the strong points of an institution, but I should like to state clearly that there are many details in the Sutton School of which the Managers may be justly proud. The school is the largest of its kind in the kingdom, and it is evident that the staff has been sincere in its endeavour to attain a high standard of efficiency in all departments. In bringing this Report to its conclusion, I should insist that the task of eradicating ophthalmia depends upon the care which is devoted to details, no matter how small and seemingly foreign to the matter in hand. A rigorous observance of sanitary precautions is required for the stamping out of ophthalmia, and, broadly speaking, any measure which attacks that disease is a step towards improvement in other directions. The various suggestions upon which I have dwelt are needed not less for general than for ophthalmic reasons. In any case, ophthalmia or no ophthalmia, your Board will doubtless recognise the necessity of immediate action in many of the points set forth in this Report.

I have, lastly, to tender my general thanks to the officials, who received me courteously, and gave me every information that I sought. My special thanks are due to Mr. Martin, the Superintendent of the Brighton Road School, who, besides supplying me with measurements and plans, spared no pains to render my examination as little burdensome as possible.

I remain, Gentlemen,

Yours obediently,

SYDNEY STEPHENSON, M.B., F.R.C.S.E.,

Surgeon to the Ophthalmic School, Hanwell, W., etc., etc.